

T News Letter **TDARS**

G3ZME
G6ZME

TELFORD AND DISTRICT AMATEUR RADIO SOCIETY

www.TDARS.org.uk

FOUNDED 1969

www.TelfordHamfest.co.uk

Issue 272

Feb-March 2016

www.TDARS.org.uk

Programme

www.telfordhamfest.co.uk

- February 17** *Indoor Bowls evening with LWWH Bowls Club. Light refreshments*
- February 24** *Winter Projects #3. All done and dusted? Bring 'em along.....*
- March 2** *Committee Meeting—GX3ZME on the air*
- March 9** *Main Construction Competition. Please try and bring something electronic you've made in the past year. Award for Novices too.*
- March 16** *Portable Events for 2016 including Marconi IMD, Guernsey, VHF NFD*
- March 23** *Practical: Making your own Slim Jim 2m (or 70cm) antenna*
- March 30** *TDARS ANNUAL GENERAL MEETING. (Subs due!)*
- April 3 (Sun.)** ***GX3ZME/P from Wappenshall Canal Centre (Nr Wellington) M0JZH***
- April 6** *Committee Meeting—GX3ZME on the air*
- April 13** *Surplus Equipment Sale*
- April 20** *Show and Tell evening. Focusing on construction & tools used.*
- April 22-24 (Fri-Sun)** ***Int. Marconi Day. GB8MD from Tywyn, West Wales. (M0JZH)***
- April 27** *PSUs —lab session. Types and potential QRM. Brian G6UDX*
- May 4** *Committee Meeting—GX3ZME on the air*
- May 11** *10 Minute Talks.—by members, for members.*

For Amateur Radio Exam Training—enquiries to Mike G3JKX (01952 299677)
For Morse Training and Morse Proficiency Tests Martyn G3UKV or Eric M0KZB.
For Equipment Loans & Returns contact Don M0TBQ or Ian M0IRP
Radio Amateur Exams- Latest: www.tdars.org.uk/html/training.html

Editorial

It's obvious that Contesting isn't everybody's cup of tea. Last VHF NFD in July 2015, I gather there were just 8 operators. This is barely sufficient when you realise we need to keep 4 stations/bands operational for most of 24 hours, with just a few hours respite in the middle of the night. Likewise, Simon always seeks a few more ops for the 50 MHz Trophy contest in June.

I would like all TDARS members to consider the benefits of contesting, even if you think it's not for you. ***Do you want to have a variety of QSOs ? Do you want your station to be as efficient as possible? Do you want to put out a clean, easily received signal on one or more amateur bands? Do you want to improve your operating (particularly receiving and logging) skills?*** If your answer to any of these questions is "**No**" - then perhaps contesting is not for you, so ignore the rest of this Editorial ! Otherwise, please read on Contesting meets all the above criteria !

First of all, contests come in many flavours. There are the weekend all-band HF stormers, lasting up to 48 hours. These are for the dedicated, hardcore contest types, or for contest groups; not for the faint-hearted. Then there are shorter weekend events, either on Saturday or Sunday, often lasting from 4 to 8 hours, and covering just one or two amateur bands. Practical Wireless 2 and 4 metre summertime contests, RSGB 'Backpacker' (5 sessions on 2m), 4m & 6m Cumulatives. On HF, there is the Commonwealth 24hr contest—great for picking up some rare DXCC entities (March 12-13, 10:00-10:00 UTC). Likewise, the IOTA (Islands OTA) July 30-31, 12:00 to 12:00hrs.

BUT for starters, ***short, evening contests are perhaps the way to go***—and their popularity has soared in recent years—as most of us seem to have too many commitments at weekends to indulge in lengthy periods shut away in the ‘shack’. Most of you probably know about the UKAC (UK Activity Contests) every Tuesday evening, from 20:00-22:30 hrs, These rotate each week—the first Tuesday of the month is for 2m, then 70cm on the second, 23cm on the third, and SHF (microwaves) and 6m on the fourth; finally 4m on those months with a fifth Tuesday. On HF, there are 1.5 hour CC (Club Championship) contests weekly from February to July, with rotating mode fixtures, ie SSB, CW and Data (RTTY and PSK only). Then there are 1 hour evening sessions—the Club Sprint series on 80m, between August and November. The great thing about these HF and VHF evening sessions (apart from their shortness) is that even if you only have a few QSOs, your entry makes a difference to the TDARS accumulated score. Also, if you’re not familiar with contest logging software, you can do it all on a paper log, and then enter your QSOs line-by-line later in the week via the RSGB on-line ***‘Log Generator’*** which is available below the Contest Rules details. ***Why not make a start NOW?*** Go to RSGB/Main website, then use the tab for “***Radio Sport***” and select either ***HF or VHF***. You may even enjoy yourself.

MIV

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TELFORD & DISTRICT AMATEUR RADIO SOCIETY

CHAIRMAN: Eric Arkinstall M0KZB (01743 240286)

VICE-CHAIRMAN: Martyn Vincent G3UKV (01952 255416)

SECRETARY: John Humphreys M0JZH (07824 737716)

TREASURER: Jim Wakenell G8UGL (01952 684173)

CURATOR : Don Nicholls M0TBQ (01952 411680)

NEWSLETTER EDITOR: Martyn Vincent G3UKV (01952 255416)

PUBLICITY : Dave G0CER (01630 638699 or 07971 416940, leave msg)

Committee: Simon G0UFE; Eric M0KZB; Martin 2E0TRO; Brian G6UDX; WebMaster Rob M0TOY; Trophies/Certs:

Qtc: News & Information



TDARS MEETINGS EVERY WEDNESDAY AT LITTLE WENLOCK VILLAGE HALL UNLESS INDICATED OTHERWISE ON THE FRONT PAGE PROGRAMME. ROOM BOOKED FROM 7PM - 10PM. MEETINGS USUALLY COMMENCE AT 8PM

Please note: A current membership card must be shown to borrow TDARS equipment. Please return borrowed equipment promptly .

The new **Yaesu Fusion Repeater for GB3TF** became operational on Wednesday 6th January 2016, ten years (to the day) after the previous Tait equipment was installed, and 24 years (almost to the day) since GB3TF first became operational at its old QTH in Dawley Bank in 1992 using Pye equipment. After a few initial 'wobblies', 'TF' is working well. Users seem to have adapted quickly to the non-existent 'pips', and rapid carrier cuts at the end of an 'over'. Its auto-ID is currently set at 10 minutes, and the logic is set to 'auto/auto', which effectively means analogue FM IN gives FM OUT, and C4FM (digital) IN gives C4FM OUT. In addition to requiring 103.5Hz CTCSS on transmit to access the Repeater, many users have set their radios to only open their squelch from the reciprocal 103.5 CTCSS sub-audible tone transmitted by the Repeater. This reduces the annoyance of a digital (C4FM) signal (loud white noise) being heard on an FM-only rig. The old 1750Hz access tone no longer works on 'TF', so CTCSS is now essential. Receive sensitivity has more than doubled with extra filtering now fitted to 'TF' on both the receive and transmit ports. Put another way, GB3TF has a far wider 'footprint' and is far more accessible in all directions. It is interesting to note that **GB3LH** (Shrewsbury), **GB3VM** and **GB3VN** (Ludlow) now all use Fusion Repeaters, so it is a County wide system, with several others opening up across the Midlands. Best of all, whether you want to go digital (Yaesu way!) or stick with your faithful FM gear, the choice is yours on 'TF'.

The **'Winter Construction' Projects** should now be well under way, if not complete. Remember the final Projects evening is on **Wednesday 24th February**, and the annual Construction Competition is two weeks later on **March 9th**. Please bring your project(s) along, even if they're not quite complete. Entries for the Construction Competition are not limited to the club initiated projects of course, and the more entries there are, the better. Also, if you've never entered before, there is a **Novice Trophy** to encourage first-timer constructors. Some years this has needlessly remained in the club storage cupboard due to a lack of any entries.

Congratulations to **Jim G8UGL**, who has now become the **RSGB Deputy Regional Manager** for this area ("DRM 53"). Including Jim, there are 4 deputies covering all of Gloucestershire, Shropshire, Hereford, Worcester, West Midlands, Birmingham and Staffordshire—which includes about 35 clubs and groups. Martyn G3UKV is the overall Regional Manager for Region 5 ('West Midlands').

As well as a wide range of excellent operating and test equipment, TDARS has quite an extensive **library of books** that can be borrowed by Members (but see note in green at top of page!) The list of titles is available on the TDARS website, although a few more recent titles have not yet been included. (curator?!) The current "YearBook 2016" is a great source of info.



Mini DXpedition to Guernsey. June 24-29th (Friday thru' Wednesday). All welcome. All bands, All day (and evening!). Want to join? Contact G3UKV

As most members know, the club holds the **Special Contest Call G3Z**—which we need to promote and use more. Now Paul M0PNN has reserved a SCC for himself as a keen Contester: so look out for **M4M**.

TDARS has always promoted home construction of equipment, from the most basic of test equipment (eg an RF 'sniffer') to a complete transmit/receiver (transceiver). It has been pointed out that we are really in a 'golden age' for availability of components for such projects—what with on-line sources of everything from a single capacitor to display modules and printed circuit boards—mostly at very reasonable prices. This has shown in the use of available pre-etched PCBs and parts for several of this year's club promoted projects (variable PSU, morse keyer, multi-component tester, voice 'parrot' keyer). Perhaps the ultimate 'bargain' PCB+ spotted on-line from China is a single board HF 6 band transceiver module, with components, for under £50.!! Heaven knows what spec. it offers, but what an amazing price!

Eric 'KZB and Paul 'PNN are once again offering **CW (morse) training** to anyone interested—Member or not. Interactive sessions take place on 2 metres on Tuesday and Thursday evenings, and sometimes on Skype. They will help both beginners and those wishing to brush up on their CW skills. Contact Eric M0KZB for further details.

After much deliberation and discussion in committee and with members, the club has now purchased an **Icom IC7600 for HF and 6 metres**. It is the follow-on to the very popular IC756 series, which had 4 re-incarnations, of which the club owns the earliest version, brought out in the mid nineties. The committee felt we needed to continue to have a 'contest grade' transceiver, both for pleasurable HF/6m operation, but also to use in contests (eg 6m Trophy in June) and to let members have the opportunity to operate a top-notch rig from time to time. To offset the cost, it is intended to sell the original IC756, plus the Elecraft KX3 (now sold-Ed) and a number of other smaller club items that have not been used or lent out for years.

The **overall 2015 UKAC contest results** have now been published on the RSGB Radio Sport website. TDARS came 31st out of 134 Clubs entering—a good result with just 4 members sending in entries. Dave G0CER contributed most, with scores on 6m, 4m, 2m, 70cm: Dave came 95th out of 682 individual entries: Well done Dave.

G0CER 95th (of 682 entries). Entries on 6, 4, 2m and 70cm

G3UKV 238th. Entries on 4m, 23cm, 13, 9, 6 and 3cm

M0PNN 406th. Entries on 6 and 2m.

G8UGL(/P on 3cm) 476th Entries on 6m, 4m and 3cm.

Think how well TDARS could do if even a **quarter** of the Membership put in an entry for UKAC. It really isn't that difficult. Just ask the above guys if you want any guidance. More than 10 months left of the year—so it's not too late until Christmas 2016 to Have-a-Go !

So far this year (mid Feb.) TDARS is 22nd of 70 clubs across the UK. Your club needs **YOU...**

The webmaster for the excellent **TDARS Website** (www.tdars.org.uk) is due shortly to change hands. **Dave G0CER** is taking over from **Rob M0TOY** who has done a great job for several years. Many thanks, Rob, from all the committee and all TDARS Members. It is one of the best radio club websites around, with constant updates and masses of information.

The TDARS AGM takes place on WEDNESDAY 30 MARCH at 8pm.

AGENDA :

- 1) Apologies**
- 2) Minutes of AGM held 25 March 2015, and Matters Arising**
- 3) Chairman's Report**
- 4) Treasurer's Report & presentation of accounts. 2016/17 subscription rates**
- 5) Appointment of Auditors 2016/17**
- 6) Election of Society Officers and committee**
- 7) Presentation of Awards and Trophies**

The **Under-a-Fiver Construction competition** had more entries than ever this year—12. Thanks to G6UDX, G0UFE, 2E0TIL, G3UKV, M0PNN and M0RKY for their entries. Their projects ranged from a 'cable puller', PSU, LPF, Slim-Jim, car roof-bar bracket, latch-relay driver to CW keyer kit and VHF pre-amp + more. The **worthy winner was Paul 2E0TIL** with a very straightforward project of his own design, built on a home etched PCB. It was basically a continuity tester, with both audio and bright-LED indication. But he could also send CW, light up somewhere on a dark night, estimate resistance and more. Definitely a multi-purpose unit ! In second place was Paul's Power Supply (PSU), which was made entirely of bits and bobs found at a golf course and elsewhere. Finally, Brian G6UDX's NiMH battery pack to retro-fit in his Icom collection of VHF transceivers (IC290, IC790 etc) was third.



Brian G6UDX shows one of his 3 entries:



Simon's G0UFE widget to feed cables through walls:



Richy M0RKY shows us his Slim Jim:

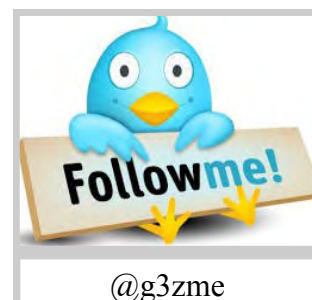
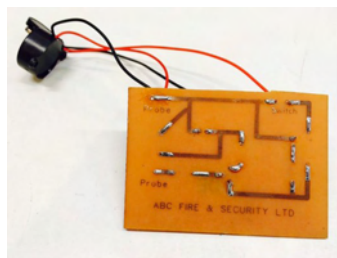
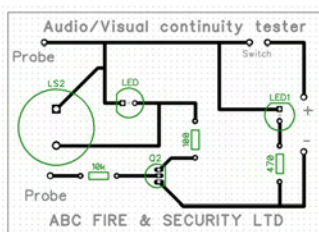


Paul 2E0TIL's winning entry—still in its case. Continuity tester ++ see below:



Paul M0PNN presents his PSU project built from oddments: (2nd)

Paul, perhaps surprised by his success, later sent out this message:- *"Hi Guys. Thank you all that voted last night. I was amazed and shocked. For any that are interested I have started using some free software called Diptrace to make my circuits and then transfer them to pcb board. I have attached a few pictures of the board and then if you download the 3d Module that is also a free add-on to the software you can see the outcome. I have also shrunk the board and tried to do some solder mask. (attached photo)* Again thank you all for your kind support."



A selection of suggestions emerged from the **Open Forum meeting** held at the end of January: Mike G3JKX asked if a fresh round of **DF (Direction Finding)** hunts could take place, with perhaps an inter-club competition (G0CER). The RSGB ARDF group are offering an extended session to clubs, including anyone new to DFing (G3UKV).

Contesting from LWVH itself was raised (G0CER) - perhaps the RTTY event in March, in the 6 hour section. A marquee could be loaned to the club for such events (2E0TTB) in the LW field. More **portable events**, either 'special event' or contesting including the winter months (2E0KLS) - to encourage more people to engage with radio and gain operating experience. (2E1DYL).

Publicity for such activities need good advance publicity: Social media & website (G6DFD). More members' involvement in Tuesday UKAC (G8UGL) and summer uWave /P (G3UKV). How about Armed Forces Day display/event station? (2E0KLS) - but busy time of the year. **Wed. evening meetings**—Lab sessions, test gear, demonstrations, help/support (G6UDX).

Eric (M0KZB) hoped members would **support ALL tdars activities**, and not just 'cherry pick' the high profile events. The meeting lasted just over an hour, and led to more follow-up in The Huntsman!

Thanks for lots Newsletter input this time from Paul M0PNN, Don M0FHM, Mike G3JKX, Brian G6UDX, Paul 2E0TIL, Robin G1MHU
Next edition April 2016: Keep it coming please!

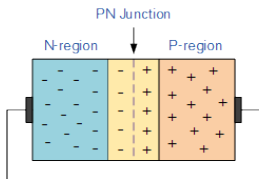
How junction diodes and bipolar transistors work

Silicon & germanium have atoms whose electrons are arranged in 'shells' with just 4 electrons in the outermost shell. Both these materials are insulators in their pure state.

N material is pure silicon but doped with a tiny amount of a substance whose atoms have 5 electrons in their outer shell. (arsenic, antimony or phosphorus; ratio about $1:10^7$). This means that 'spare' electrons are readily available in the resulting crystal lattice.

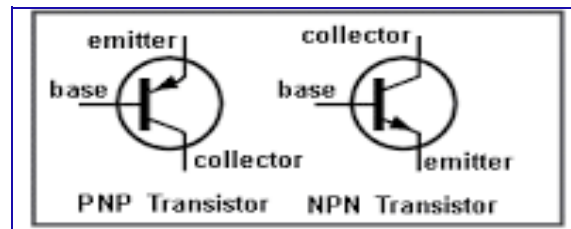
P material is doped with indium, boron or aluminium, which have an outer shell of 3 electrons. When mixed with pure silicon the resulting lattice has 'holes' where electrons are missing.

When P and N material come together in a 'junction', some of the spare electrons in the N region see space for themselves in the P region holes and travel across the junction. Now when these electrons moved, the N type became slightly positive and the P type slightly negative. Inevitably the time comes when enough electrons have moved, making the voltage built up across the join large enough to prevent any more electrons from crossing. This is known as the barrier voltage and is about 0.6v (0.4v for germanium, 0.2v for Schottky diodes). The area between the N and P regions, now devoid of electrons, is known as the 'depletion layer' and is therefore an insulator! (see later)



If the P region is now made very positive from a power source and the N region connected to negative from the same power source, the barrier voltage is overwhelmed and electrons flow easily through the diode. The P region is now known as the anode of the diode and N the cathode.

An NPN transistor has a very thin layer of P type sandwiched between 2 pieces of N type. The P type is now known as the 'base' of the transistor. The upper N type called the collector, is connected to the positive power supply, usually through a resistor. The other N type has the negative supply connected to it a resistor (usually) and is called the emitter.



via

As before the PN barrier voltage must be overcome so, by applying enough +ve bias to the base, the PN junction will conduct. However, because there is a very much larger +ve potential on the collector, electrons will overshoot the base region, the large +ve collector voltage drawing these to itself, so a large collector current now flows. The small +ve bias on the base has switched the transistor on.

If a RF or AF signal is now impressed on top of the base bias voltage, the collector current will be varied in sympathy with the applied signal, producing a much larger inverted version of itself. Inverted? When the base is made more positive signal the collector current rises. The increased current drawn through the collector resistor will cause the collector voltage to fall.

Similarly, if the input to the base goes more negative, the collector current decreases and the collector voltage rises in sympathy. Thus the base signal is inverted at the collector, but larger.

PNP transistors are very similar in operation but the collector voltage must now be negative, with the emitter being positive. A -ve bias is now required for the base N region.

Any PN diode, if reverse biased, i.e. P to negative, N to +ve will cause the depletion layer to widen and thus reduce the inherent capacitance between the two regions. Using a variable +ve supply from a potentiometer on to its cathode, the 'capacitance diode' can be used to tune the resonant frequency of an oscillator's tuned circuit.

This description is necessarily simplified but will hopefully help your understanding a little.

(Note: Illustrations inserted later & not related directly to the text –Ed)

73 Mike G3JKX

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**E-mail from Don M0FHM:-**

"I have set up a Yahoo reflector group for those interested in the new Digital system.

I have set up a Facebook shooter group for those interested in the new Digital system. I was advised to have the group moderated so I know the membership. We have 11 members so far.

To join, send an e-mail to:

midlandfusion@yahoo.co.uk and I will add you to the list.

I am also setting up a small website for Fusion and will let you know when it is ready. “



The November **160m ‘Club Calls’** entry from GX3ZME/P placed us 30th out of 50 club stations, with 1222 pts. They now also list individual scores, for which we came 22nd out of 122—which shows that it would be worthwhile for a number of members to have a go this autumn, (November 12) to raise our placing. It’s a one-off 3 hour evening contest.

E-mail from Brian G6UDX re chargeable batteries:

*"Just a bit of a "heads-up" to anyone who uses a smart charger similar to the iMax B6.*

*If you buy brand new batteries and attempt to charge them straight out of the packet you may find the charger reports "Connection Failure". This because the charger tries to sample the battery voltage before it starts its charge cycle.*

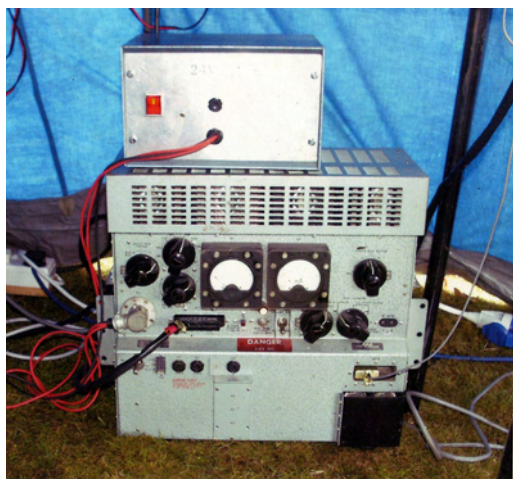
*Some brand new batteries, NiMh particularly, have so little initial charge it confuses the charger.*

The "quick and dirty" fix I applied was to give them a 10 minute hour jump-start charge from a little 1 amp current limited power supply I had knocking around.

Once the batteries have this kick-start they should be OK for their working lives provided you don't ever completely flatten them.

*Without writing a treatise on the care of rechargeable batteries it should suffice to say this isn't good practice anyway."*

Contrasting station equipment: The L/H photo was sent in by Don M0FHM—he wasn't sure about where it was taken, but it's labelled 4KV and resting on the ground! Anyone know its story? The R/H picture is from Robin G1MHU's qrz.com entry which he offered as a station picture on request: One thing in common—they both look like real amateur radio kit !



**Q signals for the Modern Age**

**QKQ - Keyboard Quit -1 must shut down my station now as my keyboard is on the blink and I don't know how to use anything else.**

**QCS - Contest Starting - Please be informed that I am keeping this frequency for the next 48hrs and any nets or rag chew here will be obliterated by the signals from my super contest set-up.**

**QRF - Restricted Frequency - This frequency belongs to the Cuss and Carp Group. If you don't use language that would make a sailor blush at least every two minutes then you should QSY.**

**QCL - Computer Logging - Don't bother sending your name, QTH, social security number, or blood type because I got all that from my logging program.**

**QPD- Processor Dependent - Sorry OM, but I am so used to hearing everyone talk with their processors set on stun that I can't understand a clear signal.**

**QWH - Wrist Hurting -1 can only send for 5 minutes because my Super Send SX-1000 keyer is broken and this straight key is killing my wrist!**

**QNC - No Code - Sorry old boy, but we don't know the code so quit qrm'ing the phone net with your silly di-di-dit. dah-dah-dah. di-di-dit.**

## Learning the Code—By Paul Bowen M0PNN

**“Why don’t you stop playing around with shortwave listening and do the new novice licence; it’s only five words per minute and you can go on HF then?”** That’s pretty much how the conversation went with my late father in the early 90s.

The problem was I could not see any possible reason to learn Morse and saw it as an outdated mode, exalted by a load of old duffers to keep the riff-raff off HF.

When the RSGB dropped the Morse test, I became interested in Amateur Radio again and took and passed the three exams and after spending a considerable time operating, it became increasingly clear to get the most out of the aspects of the hobby that interested me. I had to learn Morse code.

## Where to Start?

After researching the methods for learning Morse code, I decided to try the **Koch** method. This promises the fastest way to learn Morse at a reasonable speed with the least amount of pain. The main advantage of the Koch method is it builds reflexes. You learn the characters as a sound rather than a series of dits and dahs which you then have to convert into characters.

With the advent of the personal computer, learning Morse has in fact never been easier. No longer do you need somebody sending you Morse with a key or an expensive trainer.

The software I use is by G4FON and is called **Koch method cw trainer**. It's qslware; just send G4FON a QSL card via the bureau saying you're using his software. Download it from:- <http://www.g4fon.net/> \_ The recommended settings are 20 words per minute character speed sent with spacing's of 15 words per minute. You start with two characters K and M which are sent for 5 minutes: write them down. When you're up to a 90% copy, add the next character R and so on. On reaching 40 characters which includes all letters numbers and symbols /..? more options become available.

Text file You can make up your own text files with ‘notepad’, save them, then load them into the program which will play them back

**Words** Simply plays commonly used words.

## What Next ?

After learning all the characters, I started listening to real QSOs. It's quite amazing when you start picking out words and call signs for the first time. I knew Eric M0KZB was giving Morse code lessons to Tony and Ron, so I listened for a few weeks before I plucked up the courage and asked if Eric would teach me. Eric, who has the patience of Job, was soon sending me CW at 12wpm. After a few months of practice I was ready for my first QSO—W3DF on 18.080 MHz.

Morse has enhanced my enjoyment of Amateur Radio to the Nth degree. All my best tropo DX on two metres has been worked using Morse code and my best DX on six metres ZS6WN.

The defining moment came on the 5/03/2011 trying to work OK2M on two metres. "I know there`s someone calling... but you're too weak old man.... do you know CW?" I did and I worked him 559 no problems; I was hooked.

It's become increasingly worse: the more I use CW, the less I use voice.

I can work more DX with CW — it's as simple as that.

Cheers!

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## THE NEW CLUB HF/6 METRE RIG—ICOM 7600

**John ‘JZH explains the thinking behind this particular purchase.**



## Simon & members take a closer look

